CLAIMS

1. A mud flow pipeline system connecting a mud pump station to a drill string, said pipeline system comprising at least one acoustic resonator positioned downstream of said mud pump station, and at least one transducer connected to said pipeline system and responsive to pressure variations within said pipeline system positioned downstream of said resonator, wherein said resonator is tuned to provide within a predetermined frequency band a band stop filter for pressure variations within said mud flow pipeline.

2. The pipeline system of claim 1 wherein the resonator has a resonance frequency chosen to provide a band stop filter within a frequency band utilized for signal transmission by a downhole drilling telemetry system.

3. The pipeline system of claim 1 wherein the resonator has a resonance frequency that provide a band stop filter within a frequency band utilized by a mud pulse telemetry system.

4. The pipeline system of claim 1 wherein the resonator has a resonance frequency that provides a band stop filter within a frequency band of 1 to 100 Hz.

5. The pipeline system of any of the preceding claims wherein the resonator is a Helmholtz resonator.

6. The pipeline system of any of the preceding claims wherein the resonator is located in vicinity of a section of the mud flow pipeline system with a reduced inner diameter, forming a complex mechanical filter.

7. The pipeline system of claim 6 wherein the section with the reduced inner diameter is a Venturi constriction.

8. The pipeline system of claim 6 or 7 wherein the complex mechnical filter comprises more than one section of reduced diameter or Venturi constriction.

9. The pipeline system of claim 1 wherein the resonator is used in combination with a desurger.

10. The pipeline system of any of the preceding claims wherein the resonator comprises a housing of known volume and one or more neck tubes connecting a drilling fluid carrying pipe with said container.

11. The pipeline system of claim 10 wherein the resonator comprises more than one housing of known volume.

12. The pipeline system of claim 10 or 11 wherein the resonator is adapted to receive a pressurized charge of a gaseous medium.

13. The pipeline system of claim 10 or 11 wherein the housing comprises at least one opening providing a

vent for gaseous media.

14. The pipeline system of claim 12 or 13 wherein resonator is connected to a gas reservoir for charging.

15. The pipeline system of any of the preceding claims wherein the resonator is tunable in response to operating pressure and/or temperature within the drilling fluid carrying pipe.

16. The pipeline system of claim 15 further comprising a control unit and one or more valves wherein said control units is adapted to control said one or more valves to charge the resonator with a pressurized fluid medium or discharge it.

17. The pipeline system of claim 15 further comprising one or more valves positioned in a neck tube between resonator and mud flow system and adapted to change the effective cross-section or length of said neck tube.

18. A mechanical acoustic resonator comprising an elastically suspended mass adapted to connect with a pipeline carrying drilling fluid from a mud pump to a drill pipe in a pressure- and/or force-transmitting mode and having a resonant frequency tuned to give enhanced attenuation to pump noise with a predetermined frequency.

19. The resonator of claim 18 being a Helmholtz

resonator.

20. The resonator of claim 18 comprising a vessel partly filled with a fluid charge and at least one inlet pipe having an opening to said vessel and an opening to the drill pipe adapted to be an at least partly filled with drilling fluid.

21. A mud pulse telemetry system comprising a system in accordance with any of the preceding claims.

22. A method of reducing the noise in a surface mud flow pipeline system, comprising the steps of connecting at least one acoustic resonator to said pipeline system at a position downstream of a mud pump station and at least one transducer responsive to pressure variations within said pipeline system at a position positioned downstream of said resonator, determining a frequency band and tuning said resonator so as to provide a band stop filter for pressure variations within said mud flow pipeline.

23. The method of claim 22, further comprising the step of tuning the resonator during drilling operations.

24. The method of claim 23 wherein the step of tuning the resonator includes the steps of monitoring pressure and/or temperature within the pipeline system, determining a tuning correction with respect to a default tuning setting and altering parameters of the resonator in accordance with said determined correction.

25. Use of the method of claims 22 to 24 in a mud pulse telemetry system.